

Brown, T.A.: **Genomes**. - BIOS Scientific Publishers, Oxford 1999. 472 pp. Paperback GBP 29.95. ISBN 1-85996-201-7

The book is divided into 15 chapters associated in 3 parts.

Part 1 - How Genomes Are Studied - is describing and explaining the techniques used to study genomes. The introductory chapter introduces the reader to some typical genomes. The techniques for studying genomes are described in logical order: constructing genetic maps (chapter 2), physical maps (chapter 3), DNA sequencing methodology and strategies used to assemble a genome sequence (chapter 4), and methods for identifying genes and determining their function in the cell (chapter 5).

Part 2 - How Genomes Function. This part describes the information flow from DNA via RNA to proteins. Chapter 6 deals with genome anatomy: structure and contents of the genomes of different organisms. The following chapter 7 completes this topic about the importance of DNA-binding proteins in expressing the genomes. The first step of real gene expression—initiation of transcription—is the topic of chapter 8 and synthesis of RNA is subsequently described in chapter 9. The function of RNA's (tRNA, mRNA, rRNA and ribosomes itself), triplet structure of genetic code, mechanisms of protein synthesis and post-translation processing of new polypeptides are in details but very clearly described in chapter 10. Chapter 11 surveys the regulation of genome activity. In spite of the fact that study of regulation mechanisms develops rapidly and has still many dark points, the chapter is written readable and understandable.

Part 3 - How Genomes Replicate and Evolve. Chapter 12 explains to reader DNA replication, shows theoretical possibilities of it and real mechanisms in living cells including the nature solution of the topological problem, the problems with stability double strand and single strand DNA molecules, the role of both, enzymatic and non-enzymatic proteins in this process. The DNA molecule instability as the necessary condition of the genome evolution is the topic of chapter 13. The internal causes of DNA instability, the external factors decreased DNA stability (mutagens) and mechanisms how these factors change the genome structure are described. In chapter 14 (Pattern of Genome Evolution) the way in which these processes are thought to have shaped the structures and genetic contents of genomes over evolution are considered. Molecular Phylogenetics, chapter 15, is devoted to construction of phylogenetic trees based on not only molecular knowledge of evolution relationship between organisms.

Relevant references are located on the end of each chapter. Chapters involve explanation of crucial experiments that in history led to understanding of described mechanisms. The book is supplemented with comprehensive glossary of special terms used in text; subject index and appendix with list of journals publishing articles relevant to genome research, and list of internet addresses relevant to genome research.

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